

WHAT IS CLAIMED IS:

1. A method of detecting a position of at least one lead of an electric component which additionally includes a body from which said at least one lead extends, the method comprising the steps of

illuminating a lengthwise limited portion of the lead, with a light incident thereto in a direction substantially perpendicular to a lengthwise direction of the lead,

taking an image of the lead, on a side of a free end of the lead, in a direction parallel to the lengthwise direction of the lead, and

detecting the position of the lead by processing image data representing the taken image.

2. A method according to claim 1, wherein the electric component includes a plurality of leads, and wherein the step of detecting the position of the lead comprises detecting a position of one of the leads relative to a position of the other lead.

3. A method according to claim 1, wherein the light comprises a planar light which is incident to the lead along a plane substantially perpendicular to the lengthwise direction of the lead.

4. A method according to claim 1, wherein the limited portion of the lead is distant from the free end thereof by

a predetermined distance toward a base end thereof.

5. A method according to claim 1, wherein the limited portion of the lead consists of the free end thereof and a portion thereof adjacent to the free end.

6. A method according to claim 1, wherein the step of illuminating the limited portion of the lead comprises illuminating the limited portion of the lead with the light incident thereto in a plurality of directions substantially directed to the lead in a plane substantially perpendicular to the lengthwise direction of the lead.

7. A method according to claim 6, wherein the plurality of directions comprise at least three directions.

8. A method according to claim 1, wherein the light comprises a laser light.

9. A method according to claim 1, wherein the step of illuminating the limited portion of the lead comprises illuminating the limited portion of the lead of the electric component held by a component holding head, with the light incident thereto, and wherein the step of taking the image of the lead comprises taking the image of the lead of the electric component held by the component holding head, on the side of the free end of the lead, in the direction parallel to the lengthwise

direction of the lead.

10. A method according to claim 9, further comprising a step of moving the component holding head holding the electric component, in a direction substantially perpendicular to the lengthwise direction of the lead, wherein the step of taking the image of the lead comprises taking the image of the lead of the electric component held by the holding head, midway on a locus of movement of the lead.

11. A method according to claim 10, wherein the step of illuminating the limited portion of the lead comprises illuminating the limited portion of the lead of the electric component held by the component holding head, with the light incident thereto from a projector provided at a position offset from the locus of movement of the lead.

12. A method according to claim 1, wherein the electric component comprises a connector which includes at least one lead and which is mounted on a circuit substrate such that said at least one lead is inserted in at least one hole formed in the circuit substrate.

13. A method of mounting, on a circuit substrate, an electric component including a body and at least one lead extending from the body, the method comprising the steps of
holding, with a component holding head, the electric

component;

illuminating a lengthwise limited portion of the lead of the electric component held by the component holding head, with a light incident thereto in a direction substantially perpendicular to a lengthwise direction of the lead, and taking an image of the lead, on a side of a free end of the lead, in a direction parallel to the lengthwise direction of the lead,

detecting the position of the lead by processing image data representing the taken image, and

modifying, based on data representing the detected position of the lead, data representing a reference position of one of the component holding head and the circuit substrate relative to the other of the holding head and the circuit substrate, and inserting the lead of the electric component in a hole formed in the circuit substrate.

14. An apparatus for detecting a position of at least one lead of an electric component which additionally includes a body from which said at least one lead extends, the apparatus comprising:

a locally illuminating device which illuminates a lengthwise limited portion of the lead with a light incident thereto in a direction substantially perpendicular to a lengthwise direction of the lead;

an image taking device which takes an image of the lead, on a side of a free end of the lead, in a direction parallel to the lengthwise direction of the lead; and

an image processing device which detects the position of the lead by processing image data representing the image taken by the image taking device.

15. An apparatus according to claim 14, further comprising a support member which supports the locally illuminating device and the image taking device.

16. An apparatus according to claim 15, wherein the support member comprises:

a flat base portion which has, in a central portion thereof, an opening in which the image-taking device fits; and

a holding portion which extends from the flat base portion in a direction perpendicular to the flat base portion and which supports the locally illuminating device.

17. An apparatus according to claim 16, wherein the locally illuminating device comprises a plurality of projectors and wherein the holding portion of the support member comprises a plurality of projector-holding portions which extend from an outer peripheral portion of the flat base portion in the direction perpendicular to the flat base portion and which support the plurality of projectors of the locally illuminating device, respectively.

18. An apparatus according to claim 14, wherein the locally illuminating device comprises at least one projector

which has an outlet and projects the light through the outlet, and wherein the apparatus further comprises:

a support member which supports the projector such that the projector is pivotable about an axis line which is spaced from the lead and is perpendicular to the lead; and

an adjusting device which is provided between the projector and the support member and which adjusts an angular position of the projector relative to the support member and thereby adjusts a position where the light projected by the projector is incident to the lead.

19. An apparatus according to claim 18, wherein the projector has the outlet thereof in a vicinity of the axis line thereof.